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14. ABSTRACT The funded project to establish an integrated DNA sequencing system for education and research at Virginia State University has been successfully completed. A facility consisting of two next-generation DNA sequencers, which work in complement to each other, as well as a series of instruments essential for DNA sample preparation and quality control, has been established in a dedicated laboratory at Virginia State University. This facility is essential and has begun to be used for research on biofuel, microbiome and human health, and environmentally caused diseases that are being carried out at Virginia State University. The instruments are also being incorporated into				
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Report Title

Final Report: Developing an Integrated DNA Sequencing System for Research and Education at Virginia State University

ABSTRACT

The funded project to establish an integrated DNA sequencing system for education and research at Virginia State University has been successfully completed. A facility consisting of two next-generation DNA sequencers, which work in complement to each other, as well as a series of instruments essential for DNA sample preparation and quality control, has been established in a dedicated laboratory at Virginia State University. This facility is essential and has begun to be used for research on biofuel, microbiome and human health, and environmentally caused diseases that are being carried out at Virginia State University. The instruments are also being incorporated into courses and research experience for students at Virginia State University to train the next-generation biotechnology and biomedical research leaders.

Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

Received

Paper

TOTAL:

Number of Papers published in peer-reviewed journals:

(b) Papers published in non-peer-reviewed journals (N/A for none)

Received

Paper

TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

Number of Presentations: 0.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts

Received Paper

TOTAL:

Number of Manuscripts:

Books

Received Book

TOTAL:

Received Book Chapter

TOTAL:

Patents Submitted

Patents Awarded

Awards

Graduate Students

<u>NAME</u>	<u>PERCENT_SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Post Doctorates

<u>NAME</u>	<u>PERCENT_SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Faculty Supported

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Names of Under Graduate students supported

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields: 0.00

Names of Personnel receiving masters degrees

NAME

Alonzo Anderson

Total Number:

1

Names of personnel receiving PHDs

NAME

Total Number:

Names of other research staff

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Sub Contractors (DD882)

Inventions (DD882)

Scientific Progress

The instruments have been used to help with the study of microbes that break down cellulose, a major component of plant materials, for cellulosic bioethanol production. A variety of bacteria have been identified from soil, termite guts, and sheep rumen samples. Manuscripts are being prepared for publication of these results.

Technology Transfer

Final Report

The purpose of the funded project is to establish an integrated DNA sequencing system for education and research at Virginia State University.

This project has been successfully completed and an integrated next-generation DNA sequencing system has been established. The major components of the system consist of two next-generation DNA sequencers, Illumina MiSeq and NextSeq, which work in complement to each other. Other components of the system include instruments essential for DNA sample preparation and quality control, including Agilent Bioanalyzer 2100, Covaris M220 Ultrasonicator, Sage Science Bluepippin, and Agilent AriaMX Real-Time PCR System. The system is now housed in a dedicated laboratory at Virginia State University.

This facility is essential and has begun to be used for research on biofuel, microbiome and human health, and environmentally caused diseases that are being carried out at Virginia State University. The instruments are also being incorporated into courses and research experience for both undergraduate and graduate students at Virginia State University, which would inspire their interest and prepare them in research areas related to national defense.